

Scientists propose neuroscience framework for diagnosing addictions

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Scientists at the National Institute on Alcohol Abuse and Alcoholism (NIAAA), part of the National Institutes of Health, propose using an assessment tool to diagnose addictive disorders that considers addiction-related behaviors, brain imaging, and genetic data. According to a new review article, the Addictions Neuroclinical Assessment (ANA) would facilitate future understanding of the origin of addiction at a biological level, and could ultimately lead to more effective individualized treatments for addictions. The review appears online in the journal *Biological Psychiatry*.

The ANA would include behavioral assessment of three functional processes considered most relevant to addiction: altered perception of an object or event by drug-taking that makes it seem more attractive or important (incentive salience), increased negative emotional responses (negative emotionality) when drugs are no longer available, and deficits in organizing behavior toward future goals (executive functioning). The authors note that the selection of these processes is based on our understanding of the neuroscience of addiction.

"The assessment framework that we describe recognizes the great advances that continue to be made in our understanding of the neuroscience of addiction," said NIAAA director George F. Koob, Ph.D., a co-author of the review. "These advances underscore how much we know about the core neurobiological manifestations of addiction in people."

The classification of addictive disorders typically is based on the substance of abuse, for example, alcohol versus cocaine, and the presence or absence of various symptoms, such as difficulty controlling consumption or craving for a substance. But the authors note that differences and similarities between addictions are not constrained by the substance of abuse. They therefore propose a dimensional framework that incorporates behavioral measures with brain imaging and [genetic data](#).

"We currently approach addiction diagnosis as a 'yes or no' proposition," added first author Laura E. Kwako, Ph.D., a researcher in the Office of the NIAAA Clinical Director. "The Addictions Neuroclinical Assessment that we propose leverages knowledge of the neuroscience of addiction to identify a package of assessments that may be used to more precisely identify different subtypes of addictive disorders."

In describing the potential usefulness of their proposed [assessment tool](#), the authors draw a comparison to how clinicians combine cellular, genetic, molecular, and imaging information, with clinical history to make cancer diagnoses. They note that by integrating this information, cancer clinicians have been able to tailor the treatment of certain cancers to the specific characteristics that an individual with cancer might have.

"Although addiction treatment options exist, and indeed continue to expand, they are limited by significant within-diagnosis heterogeneity and by a failure, thus far, to define [addictive disorders](#) by their neurobiological substrates," said Dr. Koob.

The researchers emphasize the need to also collect brain imaging and genetic information from patients. Although they currently have little utility in the clinic, the researchers hope that the comprehensive measures will facilitate future understanding of the origin of addiction at a [biological level](#).

More information: Laura E. Kwako et al. Addictions Neuroclinical Assessment: A Neuroscience-Based Framework for Addictive Disorders, *Biological Psychiatry* (2016). [DOI: 10.1016/j.biopsych.2015.10.024](https://doi.org/10.1016/j.biopsych.2015.10.024)

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